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ABSTRACT

This document, which is intended for use by community and junior colleges throughout Mississippi, contains curriculum frameworks for the course sequences in the forestry technology program cluster. Presented in the introductory section are a description of the program and suggested course sequence. Section I lists baseline competencies for the program, and section II consists of outlines for the three categories of courses in the forestry technology sequence: (1) forestry courses--forest mensuration I, survey of forestry, forest surveying, silviculture I, applied dendrology, timber harvesting, forest mensuration II, forest protection, forest products utilization, silviculture II, special problem in forestry technology, and work-based learning; (2) related vocational-technical courses--fundamentals of microcomputer applications, applied soils (conservation and use), applied agricultural economics, mapping and topography, and fundamentals of drafting; and (3) related academic courses--principles of accounting I, botany, and business law. Each course outline contains some/all of the following: course name and abbreviation; course classification; course description; prerequisites; and competencies and suggested objectives. Recommended tools and equipment are listed in section III. Appended are lists of related academic topics and workplace skills for the 21st century and student competency profiles for both courses. (YLB)

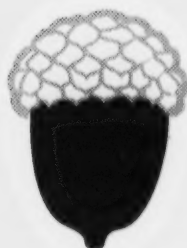
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Mississippi Curriculum Framework for Forestry Technology

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July 30, 1996

MISSISSIPPI
CURRICULUM FRAMEWORK
FOR
FORESTRY TECHNOLOGY

(Program CIP: 03.0401 - Forest Harvesting and Production Technology)

POSTSECONDARY PROGRAMS

1996

July 30, 1996

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FOREWORD

In order to survive in today's global economy, businesses and industries have had to adopt new practices and procedures. Total quality management, statistical process control, participatory management, and other concepts of high performance work organizations are practices by which successful companies survive. Employers now expect their employees to be able to read, write, and communicate effectively; solve problems and make decisions; and interact with the technologies that are prevalent in today's workplace. Vocational-technical education programs must also adopt these practices in order to provide graduates who can enter and advance in the changing work world.

The curriculum framework in this document reflects these changes in the workplace and a number of other factors that impact on local vocational-technical programs. Federal and state legislation calls for articulation between high school and community college programs, integration of academic and vocational skills, and the development of sequential courses of study that provide students with the optimum educational path for achieving successful employment. National skills standards, developed by industry groups and sponsored by the U. S. Departments of Education and Labor, provide vocational educators with the expectations of employers across the United States. All of these factors are reflected in the framework found in this document.

Each postsecondary program of instruction consists of a program description and a suggested sequence of courses which focus on the development of occupational competencies. Each vocational-technical course in this sequence has been written using a common format which includes the following components:

- Course Name - A common name that will be used by all community/junior colleges in reporting students.
- Course Abbreviation - A common abbreviation that will be used by all community/junior colleges in reporting students.
- Classification - Courses may be classified as:
 - Vocational-technical core - A required vocational-technical course for all students.
 - Vocational-technical elective - An elective vocational-technical course.
 - Related academic course - An academic course which provides academic skills and knowledge directly related to the program area.
 - Academic core - An academic course which is required as part of the requirements for an Associate degree.

- Description - A short narrative which includes the major purpose(s) of the course and the recommended number of hours of lecture and laboratory activities to be conducted each week during a regular semester.
- Prerequisites - A listing of any prerequisite courses that must be taken prior to or on enrollment in the course.
- Competencies and Suggested Objectives - A listing of the competencies (major concepts and performances) and of the suggested student objectives that will enable students to demonstrate mastery of these competencies.

The following guidelines were used in developing the program(s) in this document and should be considered in compiling and revising course syllabi and daily lesson plans at the local level:

- The content of the courses in this document reflects approximately 75 percent of the time allocated to each course. For example, in a four semester hour course consisting of 30 hours lecture and 120 hours of laboratory activities, approximately 22 hours of lecture and 90 hours of lab should be taken by the competencies and suggested objectives identified in the course framework. The remaining 25 percent of each course should be developed at the local district level and may reflect:
 - Additional competencies and objectives within the course related to topics not found in the State framework, including activities related to specific needs of industries in the community college district.
 - Activities which develop a higher level of mastery on the existing competencies and suggested objectives.
 - Activities and instruction related to new technologies and concepts that were not prevalent at the time the current framework was developed/revised.
 - Activities which implement components of the Mississippi Tech Prep initiative, including integration of academic and vocational-technical skills and coursework, school-to-career transition activities, and articulation of secondary and postsecondary vocational-technical programs.
 - Individualized learning activities, including worksite learning activities, to better prepare individuals in the courses for their chosen occupational area.
- Sequencing of the course within a program is left to the discretion of the local district. Naturally, foundation courses related to topics such as safety, tool and equipment usage, and other fundamental skills should be taught first. Other courses related to specific skill areas and related academics, however, may be sequenced to take advantage of seasonal and climatic conditions, resources located outside of the school, and other factors.

- Programs that offer an Associate of Applied Science degree must include a minimum 15 semester credit hour academic core. Specific courses to be taken within this core are to be determined by the local district. Minimum academic core courses are as follows:

- 3 semester credit hours Math/Science Elective
- 3 semester credit hours Written Communications Elective
- 3 semester credit hours Oral Communications Elective
- 3 semester credit hours Humanities/Fine Arts Elective
- 3 semester credit hours Social/Behavioral Science Elective

It is recommended that courses in the academic core be spaced out over the entire length of the program, so that students complete some academic and vocational-technical courses each semester. Each community/junior college has the discretion to select the actual courses that are required to meet this academic core requirement.

- In instances where secondary programs are directly related to community and junior college programs, competencies and suggested objectives from the high school programs are listed as Baseline Competencies. These competencies and objectives reflect skills and knowledge that are directly related to the community and junior college vocational-technical program. In adopting the curriculum framework, each community and junior college is asked to give assurances that:
 - students who can demonstrate mastery of the Baseline Competencies do not receive duplicate instruction, and
 - students who cannot demonstrate mastery of this content will be given the opportunity to do so.
- The roles of the Baseline Competencies are to:
 - Assist community/junior college personnel in developing articulation agreements with high schools, and
 - Ensure that all community and junior college courses provide a higher level of instruction than their secondary counterparts
- The Baseline Competencies may be taught as special "Introduction" courses for 3-6 semester hours of institutional credit which will not count toward Associate degree requirements. Community and junior colleges may choose to integrate the Baseline Competencies into ongoing courses in lieu of offering the "Introduction" courses or may offer the competencies through special projects or individualized instruction methods.
- Technical elective courses have been included to allow community colleges and students to customize programs to meet the needs of industries and employers in their area.

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PROGRAM DESCRIPTION

FORESTRY TECHNOLOGY

Forestry Technology is an instructional program that prepares individuals to produce, protect, and manage timber and other forest crops. Students enrolled in the program will participate in a variety of learning experiences related to land and forest measurements, growth processes of timber stands, tree identification, timber and forest product harvesting, timber stand management and protection, and forest products utilization. The program combines lecture-based activities with laboratory field experiences.

Forestry Technology is a two-year technical program. An Associate of Applied Science degree is awarded upon successful completion of the curriculum.

FORESTRY TECHNOLOGY

SUGGESTED COURSE SEQUENCE*

Baseline Competencies for Forestry Technology**

FIRST YEAR

3 sch	Botany (BIO 1313)	4 sch	Technical Elective
4 sch	Forest Mensuration I (FOT 1114)	4 sch	Technical Elective
3 sch	Fundamentals of Microcomputer Applications (CPT 1113)	4 sch	Applied Soils - Conservation and Use (AGT 1714)
3 sch	Survey of Forestry (FOT 1813)	3 sch	Approved Elective
3 sch	Math/Natural Science Elective	3 sch	Written Communications Elective
		18 sch	
16 sch			

SECOND YEAR

4 sch	Forest Surveying (FOT 2124)	4 sch	Timber Harvesting (FOT 2424)
4 sch	Silviculture I (FOT 2614)	3 sch	Technical Elective
3 sch	Applied Dendrology (FOT 1713)	3 sch	Technical Elective
3 sch	Oral Communications Elective	3 sch	Humanities/Fine Arts Elective
		3 sch	Social/Behavioral Science Elective
14 sch		16 sch	

Technical Electives:

4 sch	Forest Mensuration II (FOT 1124)
4 sch	Forest Protection (FOT 1314)
4 sch	Forest Products Utilization (FOT 1414)
4 sch	Silviculture II (FOT 2624)
1-6 sch	Work-Based Learning in Forestry Technology (FOT 292(1-6))
3 sch	Principles of Accounting I (ACT 1213)
3 sch	Applied Agricultural Economics (AGT 2263)
1-3 sch	Special Problem in Forestry Technology (FOT 291(1-3))

Technical Electives (continued):

- 3 sch Business Law (BAD 2413)
- 3 sch Mapping and Topography Lab (DDT 2423)
- 3 sch Fundamentals of Drafting (DDT 1114)

- * Students who lack entry level skills in math, English, science, etc., will be provided related studies.
- ** Baseline competencies are taken from the high school Forestry program. Students who can document mastery of these competencies should not receive duplicate instruction. Students who cannot demonstrate mastery will be required to do so.

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SECTION I:
BASELINE COMPETENCIES
FOR
FORESTRY TECHNOLOGY

BASELINE COMPETENCIES FOR POSTSECONDARY FORESTRY TECHNOLOGY PROGRAMS

The following competencies and suggested objectives are taken from the publication *Mississippi Curriculum Framework for Secondary Forestry*. These competencies and objectives represent the baseline which was used to develop the community/junior college Forestry Technology courses. Students enrolled in postsecondary courses should either: (1) have documented mastery of these competencies, or (2) be provided with these competencies before studying the advanced competencies in the Forestry Technology programs.

Baseline competencies may be integrated into existing courses in the curriculum or taught as special "Introduction" courses. The "Introduction" courses may be taught for up to six semester hours institutional credit and may be divided into two courses. If the Baseline competencies are to be taught as "Introduction" courses, each course should be at least three credit hours. The following course number(s) and name(s) should be used:

Course Name(s): Introduction to Forestry Technology, Introduction to Forestry Technology I, or Introduction to Forestry Technology II

Course Abbreviations: FOT 100(3-6), FOT 1013, FOT 1023

Classification: Vocational-Technical Core

Description: These courses contain the baseline competencies and suggested objectives from the high school Forestry program which directly relate to the community college Forestry Technology program. The courses are designed for students entering the community college who have had no previous experience in the field. (3-6 semester hours based upon existing skills for each student. May be divided into 2 courses for a maximum total of 6 hours of institutional credit.)

Competencies and Suggested Objectives:

1. Explain the importance of forestry.
 - a. Describe the elements of a forest community, including trees, plants, shrubs, soil, water, and animal life.
 - b. Describe the importance of trees and forests, including products, employment, climate, air quality, erosion, and recreation.
 - c. Describe the amount of forested land worldwide and in the United States, including acres of forest land and acres of commercial land within the local county or regional area.
 - d. Describe the history of forestry, including the importance of forestry to the South and to Mississippi.

- e. Describe the importance of forests in the South, including growing season, timber inventory, and economic impact.
- f. Describe resources considered in multiple-use forest management, including timber, soil, wildlife, recreation, and water.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M7, S2, S4

Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6

2. Explain careers in the field of forestry.

- a. Identify the careers available in the field of forestry, including educational requirements, job opportunities, duties, and responsibilities for professional, technical, and forestry workers.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6

Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6

3. Explain the impact of federal and state regulations on forestry operations.

- a. Describe the federal regulations impacting forest operations.
- b. Describe the state regulations impacting forest operations.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, S2, S4

Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6

4. Explain the benefits of FFA participation.

- a. Identify FFA organizational activities that promote and recognize achievements in forestry, including career development events, personal development seminars, leadership conferences, national and international exchange programs, education experience with industry, and personal and community development programs.
- b. Identify the benefits of FFA participation to an individual and to the forestry industry, including personal growth and development, exposure to the forestry industry environment, and multicultural experiences.
- c. Identify opportunities for members in the FFA organization, including personal development, personal recognition, travel, association with persons from other parts of the United States and abroad, career exploration, and self-expression.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6

Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6

5. Demonstrate group leadership skills.

- a. Develop and present a 3-5 minute speech on a forestry topic, including guidelines for preparing a successful speech, speech outlining, resource development, writing skills, and presentation skills.
- b. Describe the purposes and functions of parliamentary procedure, including the ability to conduct a meeting, methods of voting, motions and their handling, and officer positions and functions.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6

Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6

6. Explain forest safety practices.

- a. Describe environmental hazards, including heat, cold, insects, wildlife, and topographical hazards.

- b. Describe first aid and first aid equipment used in forestry work.
- c. Describe job site safety practices, including the hazards, carelessness, safety equipment, safety regulations, and prevention of accidents.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, S8

Workplace Skills (See Appendix B): WP1, WP6

7. Explain tree physiology.
 - a. Describe the main parts of a tree, including trunk, crown, and roots along with their functions.
 - b. Describe tree respiration and photosynthesis, including respiration, transfer of water, minerals, nutrients, and production of food.
 - c. Describe environmental and biological factors that affect tree growth, including temperature, moisture, light, air, soil, tolerance, and hardiness.
 - d. Describe the methods of tree reproduction, including sprouts, seeds, and suckers.
 - e. Identify characteristics of tree growth, including height and diameter growth.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, S2, S4

Workplace Skills (See Appendix B): WP2, WP6

8. Explain forest stand development.
 - a. Identify stands according to classifications, including age, size, and composition.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, S2, S8

Workplace Skills (See Appendix B): WP2, WP6

9. Explain applications of tissue culture, cloning, and other advances in biotechnology to forestry.
 - a. Describe applications of tissue culture, cloning, and other advances in biotechnology to forestry.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, S7, S8

Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP6

10. Explain the tree classification system.
 - a. Identify nomenclature and taxonomy terms, including common name and binomial name.
 - b. Describe identifying characteristics of trees, including fruit, leaves, twigs, bark, and tree form.
 - c. Describe the economic importance of species of trees, including the uses made of wood products from each species.
 - d. Collect leaves and bark samples of commercially valuable species found locally.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M7, S2, S8

Workplace Skills (See Appendix B): WP1, WP2, WP6

11. Explain concepts of forest surveying.
 - a. Define terms, including bearings, azimuths, chaining, boundary lines, angles, surveying, and traversing.

- b. Describe the importance of surveying to forestry, including timber sales, land measurement, boundary marking, and mapping.
- c. Identify characteristics of a forest survey, including use of compass, measuring distances, and mapping.
- d. Identify surveying tools, including compass, chain, plumb bob, and range pole.
- e. Label parts of a compass, including magnetic needle, pivot point, housing graduated in degrees, and sighting mirror.
- f. Identify compass measurements and symbols, including azimuths, bearings, degrees, minutes, and seconds.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M7, S8
Workplace Skills (See Appendix B): WP1, WP2, WP6

12. Perform forestry surveying and mapping techniques.

- a. Determine the number of paces per chain using common pacing techniques.
- b. Perform compass, pacing, and chaining skills, including completing a traverse of a selected area.
- c. Utilize new technologies for forest surveying and mapping, including satellite imaging and global positioning system.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M7, S2, S4
Workplace Skills (See Appendix B): WP2, WP6

13. Explain the legal land description system used in Mississippi.

- a. Define legal land description terms, including bearing, blaze, contour, elevation, legend, plot, sea level, and topographic map.
- b. Describe reasons for land location in forestry, including retrace, location, and layout of boundaries.
- c. Distinguish among types of legal land descriptions, including United States Public Land Survey System (USPLSS), lot and block system, Vara, and metes and bounds.
- d. Describe the United States Public Land Survey System, including baseline, meridians, parallels, initial point, townships, and range lines.
- e. Identify the principal meridians, baselines, and initial points in Mississippi, including location of these lines on a map.
- f. Describe information found in a map legend, including direction, land, water, structures, and scale.
- g. Describe the uses of a topographic map, including location of the different types of terrain.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M7, S8
Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6

14. Apply principles of legal land description.

- a. Write, read, and locate parcels of land using legal land descriptions.
- b. Observe the records of timber and land deeds in the county courthouse.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M7, S8
Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6

15. Explain tree measurement techniques.
 - a. Define terms, including board feet, cord, diameter at breast height (DBH), diameter, diameter inside bark (DIB), diameter outside bark (DOB), form class, one thousand board feet (MBF), merchantable height, sawlog, sawtimber, and sticks.
 - b. Identify tools used in taking tree measurements and associate them with uses, including D-tape, tree stick, tree calipers, clinometer, pentaprism caliper, relaskop, and increment borer.
 - c. Classify DBH measurements into the correct diameter classes, including one- and two-inch classes.
 - d. Determine the correct location of DBH measurements, including trees on level ground, slopes, leaning, forking, and deformed.
 - e. Identify merchantable height, including heights for sawtimber, pulpwood, and specialty products.
 - f. Distinguish among the major log rules, including Doyle, Scribner, and International log rules.
 - g. Draw tally symbols, including dot-tally method.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M7, S8
Workplace Skills (See Appendix B): WP1, WP2, WP6
16. Perform volume measurement of standing timber.
 - a. Determine the volume of standing timber, including volume computation from DBH and height measurements.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M7, S8
Workplace Skills (See Appendix B): WP1, WP2, WP6
17. Perform volume measurement of sawlogs.
 - a. Calculate the net volume of logs, including measuring length and DIB at small end of log to obtain volume and weight scaling of logs for volume.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M7, S8
Workplace Skills (See Appendix B): WP1, WP2, WP6
18. Apply procedures for cruising timber.
 - a. Describe terms associated with cruising, including aerial cruising, basal area, board foot, bole, circumference, cord, cull, cunit, diameter at breast height (DBH), dendrometer, diameter, DIB, DOB, form class, hypsometer, MBF, merchantable height, sawlog, sawtimber, statistical sampling, sticks, taper, and whorl.
 - b. Describe tools and materials used in cruising, including hypsometers, dendrometers, compasses, increment borers, and wedge prisms.
 - c. Describe reasons for conducting a cruise, including management and procurement.
 - d. Describe factors that determine cruise intensity, including acreage, species, timber density, value, and purpose of cruise.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M7, S8
Workplace Skills (See Appendix B): WP1, WP2, WP6

19. Perform timber cruising.
 - a. Describe the cruising techniques, including plot and strip cruising.
 - b. Perform a cruise and volume calculation, including a strip and plot cruise.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M7, S8
Workplace Skills (See Appendix B): WP1, WP2, WP6
20. Apply procedures to identify forest types.
 - a. Define terms associated with forest types.
 - b. Distinguish between softwoods and hardwoods, including all characteristics of hardwoods and softwoods.
 - c. Identify forest regions of the United States on a map, including Pacific Coast, Rocky Mountains, Northern, Central Hardwood, Southern, and Tropical.
 - d. Identify the principal species associated with the forest regions of Mississippi, including oak-pine, oak-gum-cypress, oak-hickory, loblolly-shortleaf, and longleaf-slash.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, S2, S8
Workplace Skills (See Appendix B): WP1, WP2, WP6
21. Apply procedures to identify the physical properties of wood.
 - a. Identify the physical properties of wood according to wood uses, including specific gravity, grain, strength, stiffness, bending, hardness, toughness, ability to be stained, and chemical properties.
 - b. Describe Mississippi wood products according to their importance to the state and local economy, including sawlogs, pulpwood products, poles and posts, veneer, furniture products, miscellaneous, and by-products.
 - c. Describe the role of recycling in the forest products industry, including impact on forest management and harvesting practices.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M7, S2, S5, S8
Workplace Skills (See Appendix B): WP1, WP2, WP6
22. Develop employability skills.
 - a. Prepare a computerized resume containing essential information including personal information, education, and employment experience using correct grammar, spelling, and punctuation.
 - b. Complete job application forms including correct grammar, spelling, and punctuation.
 - c. Explain procedures for job interviews using correct job etiquette.
 - d. Demonstrate the role of an applicant in a job interview using correct interview procedures.
 - e. Explore job opportunities using a computerized database.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6
Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6
23. Participate in FFA leadership activities associated with forestry.
 - a. Identify FFA organizational activities that promote and recognize achievements in forestry, including personal development activities,

seminars, leadership conferences, national and international exchange programs, education experience with industry, and personal and community development programs.

- b. Identify the benefits of FFA participation to an individual and to the forestry industry, including personal growth and development, exposure to the forestry industry environment, and multicultural experiences.
- c. Identify opportunities for members in the FFA organization, including personal development, personal recognition, travel, association with persons from other parts of the United States and abroad, career exploration, and self-expression.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6

Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6

24. Explain forest management practices.

- a. Define terms associated with applying forest management practices, including age classifications, forest management, improvement cutting, selection cutting, timber stand improvement, stand types, and wildlife management.
- b. Identify the role of forest management, including forest crops, management of stands, measurement of stands, goals and objectives of the landowner, and voluntary best management practices.
- c. Describe forest management practices, including silviculture, reproduction, and harvest cuttings.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, S2, S4

Workplace Skills (See Appendix B): WP1, WP2, WP6

25. Perform forest management practices.

- a. Describe the purposes of intermediate cutting in forest management, including maximizing growth, control spacing, and removal of undesirable trees.
- b. Determine the type of intermediate cut, including pre-commercial, pulpwood, release, and salvage.
- c. Classify timber stand improvement needs, including thin overstocked stands, prescribed burning, herbicide use, and salvage cuts.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M7, S2, S8

Workplace Skills (See Appendix B): WP1, WP2, WP6

26. Plan and conduct a timber cruise.

- a. Prepare a cruise layout, including drawing of a diagram describing a 10% sample systematic grid.
- b. Conduct a timber cruise and determine tract volume and values, including 10%, 20%, and 100% samples.
- c. Determine tract volume using variable plot sampling with a 10 factor prism.
- d. Compute tract volume using data recorder assisted by computer software.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M7, S8

Workplace Skills (See Appendix B): WP1, WP2, WP6

27. Explain timber marketing procedures.

- a. Define terms associated with timber marketing, including compliance, management prescriptions, offeree, and offeror.
- b. Describe marketing practices for selling at the highest return, including marking, estimating timber, determining the value of timber, and selling the timber for the highest price.
- c. Identify potential markets, including pulp-paper mills, post mill, sawmill, specialty markets, export markets, firewood sales, and distance to these markets.
- d. Determine the highest value of a timber stand, including preparing a prospectus and a timber sale contract.
- e. Describe legal documents used in the sale and harvesting of timber, including the prospectus, timber sale contract, timber deed, and harvesting contract.
- f. Describe desirable post-harvest land conditions which may be specified in a harvesting contract, including forest management practices required by law.
- g. Describe logistics of transporting timber to markets, including the effect upon the price received by the producer.

Related Academic Topics (See Appenax A): C1, C2, C3, C4, C5, C6, M7, S8
Workplace Skills (See Appendix B): WP1, WP2, WP6

28. Explain timber harvesting procedures.

- a. Define terms associated with timber harvesting, including harvesting layout, felling, topping, bunching, skidding, merchandising, loading, and hauling.
- b. Describe the methods of harvesting timber, including selection, seed-tree, shelterwood, clear-cut, and mechanical.
- c. Identify the products of harvesting, including pulpwood, sawlogs, and specialty wood products.
- d. Develop a timber harvesting plan, including boundary marking, skid trails, landings, roads, post-harvest maintenance, and inspection.
- e. Identify types of harvesting equipment, including saws, feller-bunchers, pre-haulers, skidders, whole tree chippers, loaders, and hauling vehicles.
- f. Observe timber harvesting operations, including forest management practices of pulpwood and saw logs.
- g. Describe desirable post-harvesting land conditions, including disposition of non-merchantable timber, dead trees, tree tops, soil cover, damage caused by logging equipment, and forest management practices required by law.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M7, S8
Workplace Skills (See Appendix B): WP1, WP2, WP6

29. Explain reforestation practices.

- a. Define reforestation terms, including planting tools, methods of seeding, and site preparation.

- b. Identify the sources of tree seedlings, including private, state, and federal nurseries.
- c. Describe the methods of handling seedlings, including plant as soon as possible, heel in, and keep in cold storage.
- d. Describe the methods of planting, including direct seeding, hand planting, and machine planting.
- e. Describe the different types of site preparation, including roll chop, shearing, burning, chemical, and piling.
- f. Describe the types of reforestation, including artificial and natural means.
- g. Describe the economics of reforestation.
- h. Identify federal and state reforestation programs available locally.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M7, S8
Workplace Skills (See Appendix B): WP1, WP2, WP6

30. Perform reforestation practices.

- a. Plant seedlings, including using all available methods.
- b. Perform a compliance check, including carrying out a standard Mississippi Forestry Commission compliance check.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, S8
Workplace Skills (See Appendix B): WP1, WP2, WP6

31. Explain forest fire management practices.

- a. Define the terms associated with forest fires, including types of fires, behavior, fuels, controls, and weather conditions.
- b. Identify the elements of the fire triangle, including heat, fuel, and oxygen.
- c. Identify the classes of fires, including ground, surface, and crown.
- d. Identify the methods of attack, including direct and indirect.
- e. Identify fire fighting tools according to their uses, including rakes, swatters, cutting tools, back pack, sprayer, drip torch, and fire plows.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, S8
Workplace Skills (See Appendix B): WP1, WP2, WP6

32. Apply forest fire management techniques.

- a. Develop a prescribed burning plan, including fire lanes, weather conditions, wind speed and direction, timber type, fuel conditions, and manpower.
- b. Observe a prescribed burn operation, including requesting of the required burning permit.
- c. Develop a forest fire prevention plan, including fire lanes, section roads, prescribed burning, and emergency notification procedures.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M7, S8
Workplace Skills (See Appendix B): WP1, WP2, WP6

33. Apply forest insect and disease control.

- a. Define the terms associated with forest insects and diseases, including wood damage, leaf eaters, wood eaters, epidemic, predator, habitat, diseases, and signs of damage.

- b. Identify the reasons for identifying insect and disease damage, including prevention of epidemics and loss of timber volume.
- c. Identify the insect or disease with the symptoms of damage, including leaf eaters, wood eaters, sap eaters, phloem eaters, core borers, root feeders, and terminal feeders.
- d. Describe the various methods used to control insects and diseases, including direct control and indirect control.
- e. Identify insect and disease damage, including comparing the damage observed to the insect that caused the damage.
- f. Describe aerial forest detection procedures, including those for insect and disease problems.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, S8,
Workplace Skills (See Appendix B): WP1, WP2, WP6

July 30, 1996

SECTION II:
CURRICULUM GUIDE
FOR
FORESTRY TECHNOLOGY

July 30, 1996

FORESTRY COURSES

Course Name: Forest Mensuration I

Course Abbreviation: FOT 1114

Classification: Vocational-Technical Core

Description: A course covering fundamentals of forest measurements. Includes instruction in locating land on a map, applying sampling techniques, processing and summarizing field data. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: None

Competencies and Suggested Objectives:

1. Establish the physical location of timber and forest products to be cruised.
 - a. Apply U. S. Public Land Survey procedures to locate land on a map.
 - b. Physically locate corners and boundaries of land to be cruised from a map.
 - c. Make a preliminary study of the property to determine sampling technique, topography, cruise intensity, and direction of cruise lines.

Related Academic Topics (See Appendix A): C1, C2, C4, M1, M5
Workplace Skills (See Appendix B): WP2
2. Apply sampling techniques to measure standing timber and forest products on a given tract of land.
 - a. Describe the different types of sampling techniques used in measuring standing timber including line plot, strip, and prism cruising.
 - b. Select the appropriate sampling technique, intensity, and equipment to measure standing timber on a given tract.
 - c. Measure standing timber on the given tract according to the sampling technique and intensity stated.
 - d. Record data following industry accepted practices.

Related Academic Topics (See Appendix A): C2, C4, C6, M1, M4, S8
Workplace Skills (See Appendix B): WP2, WP4
3. Process field data to determine volume of forest products on a given plot of land.
 - a. Interpret raw data from a cruise.
 - b. Calculate cruise tally volumes for the individual tract by product class and species (hardwood, pine, pulpwood, sawtimber, specialty products, etc.).

Related Academic Topics (See Appendix A): C1, C2, M5, M7, S8
Workplace Skills (See Appendix B): WP2, WP6
4. Summarize field data and prepare a cruise report.
 - a. Prepare a detailed cruise report including legal description, timber volumes and values by species and class, average volume per acre, and average volume per tree.

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Related Academic Topics (See Appendix A): C4, C6, M7, S8
Workplace Skills (See Appendix B): WP2, WP6

Course Name: Survey of Forestry

Course Abbreviation: FOT 1813

Classification: Vocational-Technical Elective

Description: A study of the development of the forest industry in Mississippi and the United States. An exploration of occupational careers in forestry including forest products industries. Includes common terms used in forest occupations. (3 sch: 3 hr. lecture)

Prerequisites: None

Competencies and Suggested Objectives:

1. Trace the development of forestry in Mississippi and in the United States.
 - a. Identify major events, people, and dates which have influenced the development of forest policy and legislation in Mississippi and in the United States.
 - b. Identify and describe emerging practices and techniques in the forest industry.

Related Academic Topics (See Appendix A): C1, C3, S8

Workplace Skills (See Appendix B): WP2

2. Explore career opportunities in the forest and forest products industries.
 - a. Identify career opportunities in federal, state, and private agencies.
 - b. Investigate requirements for different job opportunities including education, working conditions, salaries/wages, advancement, etc.

Related Academic Topics (See Appendix A): C1, C3, S8

Workplace Skills (See Appendix B): WP2

3. Apply common terminology used in forest occupations.
 - a. Define and apply standard forestry terms.

Related Academic Topics (See Appendix A): C1, C6, S8

Workplace Skills (See Appendix B): WP2

Course Name: Forest Surveying

Course Abbreviation: FOT 2124

Classification: Vocational-Technical Core

Description: A course to provide land surveying skills required in the forest industry. Includes instruction in interpreting legal descriptions, deeds, maps, and aerial photographs; and demonstration of equipment use and surveying practices. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: Forest Mensuration I (FOT 1114)

Competencies and Suggested Objectives:

1. Interpret the legal description of land.
 - a. Use the rectangular coordinate system to locate and describe a given parcel of land on a map.
 - b. Use the rectangular coordinate system to write a legal description for a given parcel of land.

Related Academic Topics (See Appendix A): C1, C6, M5, M7
Workplace Skills (See Appendix B): WP2, WP6
2. Locate and interpret land deeds.
 - a. Search indices to locate land records.
 - b. Trace the chain of title for a given parcel of land over a given period of time (title search).
 - c. Interpret land deeds to determine location, ownership, type of conveyance, distances, and directions of boundaries and corners, etc.

Related Academic Topics (See Appendix A): C1, C6, M5, M7
Workplace Skills (See Appendix B): WP2, WP6
3. Interpret maps and aerial photographs.
 - a. Interpret topographic maps to determine boundaries and corners, acreage, legal description of land, elevations, landmarks, etc. for a given parcel of land.
 - b. Interpret aerial photographs to determine boundaries and corners, acreage, legal description of land, elevations, landmarks, etc. for a given parcel of land.

Related Academic Topics (See Appendix A): C2, C6, M5
Workplace Skills (See Appendix B): WP2, WP6
4. Demonstrate the use of surveying equipment and instruments in forestry technology occupations.
 - a. Demonstrate proper care and use of surveying instruments and equipment including compasses, transits, global positioning system, electronic distance measuring equipment, and total stations.

Related Academic Topics (See Appendix A): C2, C4, M1, M4, M5, S8
Workplace Skills (See Appendix B): WP2, WP5, WP6

5. Demonstrate surveying practices used in forestry technology occupations.
 - a. Locate and mark boundary lines for a given parcel of land.
 - b. Demonstrate the use of GPS and EDM equipment.

Related Academic Topics (See Appendix A): C2, C4, C5, M4, M5, S8
Workplace Skills (See Appendix B): WP5, WP6

Course Name: Silviculture I

Course Abbreviation: FOT 2614

Classification: Vocational-Technical Core

Description: A course dealing with the growth and development of trees and stands. Includes instruction in principles of tree and stand growth and development, regeneration, and intermediate cuttings. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: None

Competencies and Suggested Objectives:

1. Apply principles of tree physiology (silvics).
 - a. Describe the factors that affect growth of individual trees in the forest.
 - b. Describe factors that affect the growth and development of forest stands.

Related Academic Topics (See Appendix A): C1, C3, S2, S5, S7
Workplace Skills (See Appendix B): WP2, WP6
2. Apply principles of regeneration and reproductive cuttings.
 - a. Describe procedures for implementing regeneration of timber stands, including natural regeneration and artificial regeneration.
 - b. Prepare a regeneration plan for a given parcel of land.

Related Academic Topics (See Appendix A): C1, C3, S2, S8
Workplace Skills (See Appendix B): WP1, WP2, WP6
3. Select intermediate cutting procedures for various stands of timber.
 - a. Describe the different types of intermediate cuttings to include release cuttings, thinnings, pruning, and salvage.
 - b. Select the appropriate intermediate cutting procedure for a given stand of timber.
 - c. Mark trees for an intermediate cutting.

Related Academic Topics (See Appendix A): C2, C4, S8
Workplace Skills (See Appendix B): WP1, WP2, WP6

Course Name: Applied Dendrology

Course Abbreviation: FOT 1713

Classification: Vocational-Technical Core

Description: A study of trees including their classification and commercial uses.
(3 sch: 2 hr. lecture, 2 hr. lab)

Prerequisites: None

Competencies and Suggested Objectives:

1. Apply the binomial classification system.
 - a. Classify forest plant species according to the binomial classification system.
Related Academic Topics (See Appendix A): C2, C5, M1
Workplace Skills (See Appendix B): WP2, WP6
2. Apply site-species relationships.
 - a. Describe the distribution of trees in Mississippi by regions in the state.
Related Academic Topics (See Appendix A): C2, C4, M1
Workplace Skills (See Appendix B): WP2, WP6
3. Identify commercially important tree species.
 - a. Identify commercially important tree species in the area, utilizing leaves, buds, bark, and site observations.
 - b. Describe the relative economic importance of tree species by price for all wood products produced.
Related Academic Topics (See Appendix A): C2, C4, C5, S8
Workplace Skills (See Appendix B): WP2, WP6

Course Name: Timber Harvesting

Course Abbreviation: FOT 2424

Classification: Vocational-Technical Core

Description: A course dealing with harvesting practices including development of timber harvesting, regulations, harvesting plans and best management practices, and timber contracts. Includes observations of logging operations. (4 sch: 1 hr. lecture, 6 hr. lab)

Prerequisites: None

Competencies and Suggested Objectives:

1. Describe timber harvesting equipment and practices used in the southeastern United States.
 - a. Describe how timber harvesting practices have evolved over time in response to economic, environmental, and regulatory factors.
 - b. Discuss the use of harvesting equipment including operating costs, advantages, limitations, etc.
 - c. Observe equipment in logging operations and prepare a report based on the observations.

Related Academic Topics (See Appendix A): C1, C4, M1, M7, S8

Workplace Skills (See Appendix B): WP2, WP5, WP6

2. Apply regulations associated with timber harvesting operations.
 - a. Discuss safety regulations for timber harvesting operations.
 - b. Discuss environmental regulations for timber harvesting operations.

Related Academic Topics (See Appendix A): C1, C6

Workplace Skills (See Appendix B): WP2, WP6

3. Prepare a timber harvesting plan for a given parcel of timber.
 - a. Discuss BMP's (Best Management Practices) for timber harvesting, including minimizing visual and environmental impact.
 - b. Prepare a logging plan for a given tract of timber to include placement of decks, skid trails and roads, equipment to be used, access to public roads, and BMP's to be used.

Related Academic Topics (See Appendix A): C1, C6, M1, M7

Workplace Skills (See Appendix B): WP1, WP2, WP6

4. Interpret timber sale contract.
 - a. Identify essential elements of a timber sale contract including owner, location, timber removal period, type of payment, and special considerations.

Related Academic Topics (See Appendix A): C1, C4, M1, M7

Workplace Skills (See Appendix B): WP2

Course Name: Forest Mensuration II

Course Abbreviation: FOT 1124

Classification: Vocational-Technical Elective

Description: A continuation of Forest Mensuration I with emphasis on electronic and computer applications in forest measurement. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: Forest Mensuration I (FOT 1114)

Competencies and Suggested Objectives:

1. Perform forest measurements using computerized equipment.
 - a. Determine acreage of a parcel of land using a global positioning instrument.
 - b. Determine sampling intensity needed from GPS data.
 - c. Compute tract volume using a data recorder.
 - d. Download and process tract volume using a computer.
 - e. Digitize a tract map from field information.
 - f. Generate a computerized report of findings.
 - g. Utilize computer programs to present forest yields and compare returns from various silvicultural treatments and calculate investment in reforestation.
 - h. Utilize electronic data transfer (E-mail when available) to obtain timber price reports.

Related Academic Topics (See Appendix A): C1, C2, C4, M4, M5, M7

Workplace Skills (See Appendix B): WP2, WP5, WP6

Course Name: Forest Protection

Course Abbreviation: FOT 1314

Classification: Vocational-Technical Elective

Description: A course in methods and techniques for protecting forests from fire, insect, and disease damage. Includes instruction in prescribed burning procedures. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: None

Competencies and Suggested Objectives:

1. Apply prescribed burning methods.
 - a. Discuss weather factors that affect prescribed burning, including NOAA and other forecasting tools.
 - b. Discuss factors that influence timing of a prescribed burn.
 - c. Discuss regulations and liability associated with prescribed burning.
 - d. Discuss the different types of prescribed burn methods including backfire, head fire, flank fire, spot fire, and aerial ignition.
 - e. Develop a prescribed burn plan that includes notification of appropriate agencies and personnel, safety evacuation plan, application for burn permit, location of fire breaks, specific burn techniques to be employed, and fire control procedures and equipment to be used.
 - f. Conduct a prescribed burn and evaluate the results.

Related Academic Topics (See Appendix A): C1, C2, C4, C6, S4

Workplace Skills (See Appendix B): WP1, WP2, WP6

2. Apply fire suppression techniques.
 - a. Discuss direct and indirect fire suppression techniques including plow lanes and backfires, and direct attack.
 - b. Prepare a report on a specific fire in the local area and analyze the procedures used in suppression.

Related Academic Topics (See Appendix A): C1, C4, S5, S6

Workplace Skills (See Appendix B): WP2, WP6

3. Apply insect control techniques.
 - a. Identify common insect pests associated with trees including physical recognition, life cycle, probable reasons for attack, and control methods.

Related Academic Topics (See Appendix A): C2, C4, S2, S3

Workplace Skills (See Appendix B): WP2, WP6

4. Apply disease control methods.
 - a. Identify common diseases associated with trees including recognition/diagnosis of the disease, life cycle, and control methods.
Related Academic Topics (See Appendix A): C3, C6, S2, S8
Workplace Skills (See Appendix B): WP2, WP6

Course Name: Forest Products Utilization

Course Abbreviation: FOT 1414

Classification: Vocational-Technical Elective

Description: A course covering wood and forest products processing. Includes instruction in grading hardwood and pine lumber. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: None

Competencies and Suggested Objectives:

1. Discuss wood and forest products processing operations.
 - a. Identify secondary wood industries.
 - b. Describe the microscopic characteristics of wood.
 - c. Analyze the wood-water relationship.
 - d. Identify marketing information and factors that determine log and lumber cost.

Related Academic Topics (See Appendix A): C2, C4, C6, S2, S8

Workplace Skills (See Appendix B): WP2, WP6

2. Apply principles of forest products processing.
 - a. Grade trees, logs, and lumber.
 - b. Grade pine lumber.
 - c. Compare different methods for treating lumber.
 - d. Compare the different processes for kiln drying lumber.

Related Academic Topics (See Appendix A): C4, C6, M7, S2, S5, S6

Workplace Skills (See Appendix B): WP2, WP6

Course Name: Silviculture II

Course Abbreviation: FOT 2624

Classification: Vocational-Technical Elective

Description: A continuation of Silviculture I with emphasis on regeneration and site preparation practices. (4 sch: 2 hr. lecture; 4 hr. lab)

Prerequisites: Silviculture I

Competencies and Suggested Objectives:

1. Apply regeneration practices used in the forest industry.
 - a. Describe the advantages and disadvantages of the different types of natural and artificial regeneration practices.
 - b. Describe the use of genetically improved seedlings in regeneration.
 - c. Describe the different types of planting practices used in artificial regeneration.
 - d. Observe and participate in tree planting activities.
 - e. Observe applications of genetic tree improvement.

Related Academic Topics (See Appendix A): C4, C6, M1, M7, S2, S4, S7
Workplace Skills (See Appendix B): WP2, WP6
2. Apply site preparation practices used in the forest industry.
 - a. Discuss the different types of site preparation practices used in the forest industry including prescribed burning, shear and rake, chopping, herbicidal treatments, and planting with herbicide release.
 - b. Compare costs and benefits of each different type of site preparation practice.
 - c. Prepare a site preparation plan for a given tract of land to include procedures, budget, timing, acreage treated, participation in government programs, etc.

Related Academic Topics (See Appendix A): C1, C4, C6, M1, M3, M7, S2, S7
Workplace Skills (See Appendix B): WP1, WP2, WP6

Course Name: Special Problem in Forestry Technology

Course Abbreviation: FOT 291(1-3)

Classification: Vocational-Technical Elective

Description: A course designed to provide the student with practical application of skills and knowledge gained in other Forest Technology courses. The instructor works closely with the student to insure that the selection of a project will enhance the student's learning experience. (1-3 sch: 2-6 hr. lab)

Prerequisites: Minimum of 12 sch Forestry Technology related courses or consent of instructor

Competencies and Suggested Objectives:

1. Prepare a written agreement.
 - a. Compile a written training agreement in cooperation with the instructor and student which details work schedule and specific tasks/skills to be mastered in the program.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6

Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6

2. Prepare a written report of activities.
 - a. Compile a daily log of activities and tasks.
 - b. Submit weekly reports to the instructor summarizing activities and tasks completed.
 - c. Submit a final report of activities and experiences.

Related Academic Topics (See Appendix A): C1, C2, C4, C6

Workplace Skills (See Appendix B): WP1, WP2, WP6

3. Follow written guidelines for work experience programs.
 - a. Complete all required activities in the training agreement.
 - b. Adhere to all written and oral instructions for the supervised experience.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M7, S8

Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6

Course Name: Work-Based Learning in Forestry Technology

Course Abbreviation: FOT 292(1-6)

Classification: Vocational-Technical Elective

Description: This course is a cooperative program between industry and education and is designed to integrate the student's technical studies with industrial experience. Variable credit is awarded on the basis of 1 semester hour per 45 contract hours. (1-6 sch: 3-18 hr. externship)

Prerequisites: Sophomore standing in Forestry Technology or consent of instructor

Competencies and Suggested Objectives:

1. Apply technical skills needed to be viable member of the work force.
 - a. Prepare a description of technical skills to be developed in the work-based learning program.
 - b. Develop technical skills needed to be a viable member of the work force.
Related Academic Topics (See Appendix A): C5, C6
Workplace Skills (See Appendix B): WP1
2. Apply skills developed in other program area courses.
 - a. Perform skills developed in other program area courses in the work-based learning program.
Related Academic Topics (See Appendix A): C5, C6
Workplace Skills (See Appendix B): WP5, WP6
3. Apply human relationship skills.
 - a. Use pro-active human relationship skills in the work-based learning program.
Related Academic Topics (See Appendix A): C5, C6
Workplace Skills (See Appendix B): WP3
4. Apply and practice positive work habits and responsibilities.
 - a. Perform assignments to develop positive work habits and responsibilities.
Related Academic Topics (See Appendix A): C5, C6
Workplace Skills (See Appendix B): WP3
5. Work with instructor and employer to develop written occupational objectives to be accomplished.
 - a. Perform written occupational objectives in the work-based learning program.
Related Academic Topics (See Appendix A): C5, C6
Workplace Skills (See Appendix B): WP6
6. Assess accomplishment of objectives.
 - a. Prepare daily written assessment of accomplishment of objectives.

- b. Present weekly written reports to instructor in activities performed and objectives accomplished.

Related Academic Topics (See Appendix A): C5, C6

Workplace Skills (See Appendix B): WP6

- 7. Utilize a set of written guidelines for the work-based learning program.

- a. Develop and follow a set of written guidelines for the work-based learning program.

Related Academic Topics (See Appendix A): C5, C6

Workplace Skills (See Appendix B): WP6

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RELATED VOCATIONAL-TECHNICAL COURSES

Course Name: Fundamentals of Microcomputer Applications

Course Abbreviation: CPT 1113

Classification: Related Vocational-Technical (From Business and Office and Related Technology Cluster)

Description: This course will introduce information processing concepts to include: word processing, spreadsheet, and database management software. **Service course; not to be taken by Business and Office and Related Technology students.** (3 sch: 2 hr. lecture, 2 hr. lab)

Prerequisites: None

Competencies and Suggested Objectives:

1. Discuss hardware components.
 - a. Describe the input, output, and storage elements of the information processing cycle and explain each element.
 - b. Describe and discuss the three main classifications of the computer to include micro, mid-range, and mainframes.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M1, S8
Workplace Skills (See Appendix B): WP2, WP4, WP6
2. Explain classes of software.
 - a. Describe functions of systems software.
 - b. Identify widely used software applications.
 - c. Discuss various high level languages.
 - d. Discuss data organization.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M1, S8
Workplace Skills (See Appendix B): WP2, WP4, WP6
3. Create and print mailable documents.
 - a. Develop keyboarding skills.
 - b. Prepare letters using full block style.
 - c. Use word processing software to produce documents.

Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, S8
Workplace Skills (See Appendix B): WP2, WP4, WP6
4. Create and print spreadsheet.
 - a. Use spreadsheet software to produce acceptable worksheets.
 - b. Generate graphs from worksheets.

Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M7, S8
Workplace Skills (See Appendix B): WP2, WP4, WP6
5. Create and print database files.
 - a. Use database software to produce databases.
 - b. Edit database records.

c. Print reports.

Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M7, S8

Workplace Skills (See Appendix B): WP2, WP4, WP6

6. Integrate application information.

a. Merge a database with a word processing letter.

b. Merge a spreadsheet with a letter.

Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M7, S8

Workplace Skills (See Appendix B): WP2, WP4, WP6

Course Name: Applied Soils-Conservation and Use

Course Abbreviation: AGT 1714

Classification: Related Vocational-Technical (From Agricultural Business and Management Technology Cluster)

Description: A course to introduce the student to the general principles of soil conservation and safe use. Includes instruction in the soil formation process, properties of soils, soil texture, and soil management for optimum safe use. (4 sch: 3 hr. lecture, 2 hr. lab) (Note: Basic Soils (AGR 2314) may be substituted for this course.)

Prerequisites: None

Competencies and Suggested Objectives:

1. Describe the soil formation process.
 - a. Describe the chemical and biological properties of soils.
 - b. Discuss the different types of erosion.

Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M4, M7, S4, S5, S8

Workplace Skills (See Appendix B): WP2, WP4, WP6
2. Describe the different physical properties of soils.
 - a. Define the term soil texture and relate texture to productivity and management.
 - b. Classify soils as to general textural class.

Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M4, M7, S4, S5, S8

Workplace Skills (See Appendix B): WP2, WP4, WP6
3. Develop soil management strategies for sustaining soil productivity.
 - a. Define and contrast the terms fertility and productivity as applied to a soil.
 - b. Describe the effects of tillage and traffic as related to soil structure and productivity.
 - c. Describe how soil pH affects plant growth and state methods which can be used to raise or lower pH.

Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M4, M7, S4, S5, S8

Workplace Skills (See Appendix B): WP2, WP4, WP6
4. Use a transit level to design and calculate the cost of structures designed to protect and develop soil productive capacity.
 - a. Design a pond levee and calculate the cost of construction.
 - b. Design a terrace system and calculate the cost of this system.

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Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M4, S4, S5, S8

Workplace Skills (See Appendix B): WP2, WP4, WP6

Course Name: Applied Agricultural Economics

Course Abbreviation: AGT 2263

Classification: Related Vocational-Technical (From Agricultural Business and Management Technology Cluster)

Description: A course to introduce the student to economic principles as applied to agribusiness operations. (3 sch: 2 hr. lecture, 2 hr. lab) (Note: Principles of Agricultural Economics (AGR 2713) or Principles of Economics (ECO 2113) may be substituted for this course).

Prerequisites: None

Competencies and Suggested Objectives:

1. Describe agribusiness relationship to the domestic and foreign economies.
 - a. Identify agribusiness structures.
 - b. Describe methods for organizing agribusiness.
 - c. Name the causes for seasonal output.
 - d. Show how graphs and charts are used to display and present economic facts and concepts.

Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M7, S8
Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP6
2. Discuss demand theory and how a demand curve is developed.
 - a. Identify how the consumer relays information concerning wants and needs to the suppliers of goods and services.
 - b. Develop and label the demand curve.
 - c. Show the relationship between the slope of the demand curve and the concept of elasticity of demand.

Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M7, S8
Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP6
3. Discuss the economic facts associated with single variable inputs.
 - a. Identify the profit motive and how it affects the use of variable inputs in crop production.
 - b. Identify the derived demand for an input.
 - c. Describe and apply the concept of marginalism to use of variable inputs.
 - d. State the law of diminishing returns and the relationship to use of single variable inputs.

Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M7, S8
Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP6

4. Define the relationship between cost and length of run when used in planning and decision making.
 - a. Identify the different cost concepts used to describe the production of agricultural products.
 - b. Describe the factors which affect farm size.

Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M7, S8

Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP6

5. Analyze government influence on the production and price of farm commodities.
 - a. Define equilibrium price.
 - b. Analyze public policy in production system.
 - c. Discuss the influence of government regulations and foreign policy on stability and profitability of agricultural systems.
 - d. Identify the causes of surplus and shortage and the role government programs play.
 - e. Define the benefactor of all government subsidies and payments.
 - f. Identify relationships between government agencies and the cost of producing food and fiber.

Related Academic Topics (See Appendix A): C1, C2, C4, C5, M1, M7, S8

Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP6

Course Name: Mapping and Topography

Course Abbreviation: DDT 2423

Classification: Related Vocational-Technical (From Drafting and Design Technology)

Description: Selected drafting techniques are applied to the problem of making maps, traverses, plot plans, and plan and profile drawings using maps, field survey data, aerial photographs, and related references, materials including symbols, notations, and other applicable standardized materials. (3 sch: 2 hr. lecture, 2 hr. lab)

Co/Prerequisites: Elementary Surveying (DDT 1414) and Intermediate CAD (DDT 1323)

Competencies and Suggested Objectives:

1. Demonstrate the ability to plan and draw a map.
 - a. Explain and draw a plan profile.
 - b. Define the various maps and symbols used in mapping.
 - c. Prepare a contour map.

Related Academic Topics (See Appendix A): C2, C3, C5, M2, M3, M5, M7, S8

Workplace Skills (See Appendix B): WP2, WP5, WP6

2. Demonstrate the ability to transform field notes into engineering drawings.
 - a. Explain what an engineering drawing is.
 - b. Determine the correct scale size.
 - c. Explain what information is needed from the field notes to complete a drawing.
 - d. Complete a drawing from field notes.

Related Academic Topics (See Appendix A): C2, C3, C5, C6, M2, M3, M5, M7, S8

Workplace Skills (See Appendix B): WP2, WP5, WP6

Course Name: Fundamentals of Drafting

Course Abbreviation: DDT 1114

Classification: Related Vocational/Technical (From Drafting and Design Technology)

Description: Course designed to give drafting majors the background needed for all other drafting courses. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: None

Competencies and Suggested Objectives:

1. Discuss classroom procedures and drafting occupations.
 - a. Describe proper classroom/lab procedures.
 - b. Describe the various occupations in drafting and their requirements.

Related Academic Topics (See Appendix A): C2, C5, C6
Workplace Skills (See Appendix B): WP2, WP5, WP6
2. Explain and apply safety rules and regulations.
 - a. Describe safety rules for drafting occupations.
 - b. List and discuss hazardous materials found in the drafting area.

Related Academic Topics (See Appendix A): C2, C5, C6
Workplace Skills (See Appendix B): WP2, WP5, WP6
3. Demonstrate the ability to apply proper techniques in instrument drawings.
 - a. Demonstrate the ability to scale drawings.
 - b. Construct various angles.
 - c. Recognize and construct the different types of lines.

Related Academic Topics (See Appendix A): C2, C5, C6
Workplace Skills (See Appendix B): WP2, WP5, WP6
4. Demonstrate the ability to sketch and develop views of basic shapes.
 - a. Develop a pictorial view from three principal views.
 - b. Develop three principal views from a pictorial view.
 - c. Complete three principal views when lines are missing.

Related Academic Topics (See Appendix A): C2, C5, C6
Workplace Skills (See Appendix B): WP2, WP5, WP6
5. Demonstrate the ability to use geometric constructions.
 - a. Construct tangent arcs and lines.
 - b. Divide lines or arcs into equal and/or proportional parts.
 - c. Develop geometric shapes.

Related Academic Topics (See Appendix A): C2, C5, C6
Workplace Skills (See Appendix B): WP2, WP5, WP6
6. Demonstrate the ability to construct orthographic projections.
 - a. Construct a top view, with front and right side views given.
 - b. Construct a front view, with top and right side views given.

- c. Construct a right side view, with top and front view given.
- d. Develop a drawing consisting of three principal views.
Related Academic Topics (See Appendix A): C2, C5, C6
Workplace Skills (See Appendix B): WP2, WP5, WP6
- 7. Demonstrate the ability to dimension objects.
 - a. Recognize lines, symbols, features, and conventions used in dimensioning.
 - b. Recognize and use size and location dimensions.
 - c. Recognize and use general and local notes.
 - d. Dimension a drawing using contour, chain, and baseline dimensioning.
Related Academic Topics (See Appendix A): C2, C5, C6
Workplace Skills (See Appendix B): WP2, WP5, WP6
- 8. Demonstrate the ability to construct sectional views.
 - a. Construct full and half sectional views.
 - b. Recognize and construct revolved, offset, and aligned sectional views.
Related Academic Topics (See Appendix A): C2, C5, C6
Workplace Skills (See Appendix B): WP2, WP5, WP6

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RELATED ACADEMIC COURSES

July 30, 1966

Course Name: Principles of Accounting I

Course Abbreviation: ACC 1213

Classification: Related Academic

Description: A study of the elementary accounting principles as applied to the various forms of business organizations, and an introduction to specialized fields of accounting.

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Course Name: Botany

Course Abbreviation: BIO 1313

Description: A lecture/laboratory course dealing with the application of biological principles to the study of plants including classification, anatomy and physiology, and function.

Course Name: Business Law

Course Abbreviation: BAD 2413

Description: This course is designed to acquaint the student with the fundamental principles of law as they relate to the basic legal problems of business transactions in our economy. Special attention will be given to an introduction to law; law of contracts; agencies and employment; negotiable instruments and commercial papers.

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SECTION III:
RECOMMENDED TOOLS AND EQUIPMENT

RECOMMENDED TOOLS AND EQUIPMENT FOR FORESTRY TECHNOLOGY

1. Diameter tape (1 per 3 students)
2. Clinometer (1 per 3 students)
3. Loggers tape (1 per 3 students)
4. Prism (1 per 3 students)
5. Tally book (1 per 3 students)
6. Compass (1 per 3 students)
7. Crusier's vest or field bag (1 per 3 students)
8. Stereoscope (1 per 5 students)
9. Field data recorder (1 per program)
10. Microcomputer with CD-ROM, SVGA graphics, and modem (1 per 4 students)
- i 1. Microcomputer laser printer (1 per computer)
12. Digitizing tablet for computer (1 per computer)
13. Geographic information systems downlink unit (1 per program)
14. Relascope (1 per 10 students)
15. Electronic distance measure unit (1 per 10 students)
16. Complete ground station (1 per 10 students)
17. Surveyor's transit with stadia (1 per 10 students)
18. Staff compass (1 per 10 students)
19. Range pole (1 per 10 students)
20. Gunter's chain (1 per 10 students)
21. Chain pins (1 bundle per 10 students)
22. Tree marking devices (1 per 2 students)
23. Increment borer (1 per 2 students)
24. Bark gauge (1 per 2 students)
25. Hard hats (1 per student)
26. Snake leggings (1 per student)
27. Safety glasses or goggles (1 per student)
28. First aid kit (1 per 10 students)
29. Drip torch (1 per 10 students)
30. Backpack water pump (1 per 5 students)
31. Fire rake (1 per 5 students)
32. Fire flap (1 per 5 students)
33. Fire axe (1 per 5 students)
34. Round point shovel (1 per 5 students)
35. Wind speed detector (1 per 1 program)
36. Fire weather kit (1 per program)
37. Permanent weather station (1 per program)
38. Dissecting microscope (1 per 5 students)
39. Lumber rules (1 per student)
40. Moisture meter (1 per 5 students)
41. Tree injector (1 per 5 students)

42. Tree planting bar (1 per 5 students)
43. Hoe-dad planter (1 per 5 students)
44. Tree planting bag (1 per 5 students)

INSTRUCTIONAL RESOURCES

1. Microcomputer integrated software package (word processing, spreadsheet and data base)
2. Digitizing software package
3. Timber cruising software package
4. GPS mapping system software
5. Tree identification slides
6. Wood identification kit
7. Hardwood lumber grading slides
8. Pine lumber grading slides
9. Video camera/recorder
10. 35mm SLR camera
11. Binoculars
12. Video out (Microcomputer to TV monitor) (1)
13. TV/monitor and VCR
14. Cart, AV (for use with TV monitor and VCR)

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APPENDIX A:
RELATED ACADEMIC TOPICS

APPENDIX A

RELATED ACADEMIC TOPICS FOR COMMUNICATIONS

- C1 Interpret written material.
- C2 Interpret visual materials (maps, charts, graphs, tables, etc.).
- C3 Listen, comprehend, and take appropriate actions.
- C4 Access, organize, and evaluate information.
- C5 Use written and/or oral language skills to work cooperatively to solve problems, make decisions, take actions, and reach agreement.
- C6 Communicate ideas and information effectively using various oral and written forms for a variety of audiences and purposes.

EXPANDED TOPICS FOR COMMUNICATIONS

TOPIC C1: Interpret written material.

- C1.01 Read and follow complex written directions.
- C1.02 Recognize common words and meanings associated with a variety of occupations.
- C1.03 Adjust reading strategy to purpose and type of reading.
- C1.04 Use sections of books and reference sources to obtain information.
- C1.05 Compare information from multiple sources and check validity.
- C1.06 Interpret items and abbreviations used in multiple forms.
- C1.07 Interpret short notes, memos, and letters.
- C1.08 Comprehend technical words and concepts.
- C1.09 Use various reading techniques depending on purpose for reading.
- C1.10 Find, read, understand, and use information from printed matter or electronic sources.

TOPIC C2: Interpret visual materials (maps, charts, graphs, tables, etc.).

- C2.01 Use visuals in written and in oral presentations.
- C2.02 Recognize visual cues to meaning (layout, typography, etc.).
- C2.03 Interpret and apply information using visual materials.

TOPIC C3: Listen, comprehend, and take appropriate action.

- C3.01 Identify and evaluate orally-presented messages according to purpose.
- C3.02 Recognize barriers to effective listening.
- C3.03 Recognize how voice inflection changes meaning.
- C3.04 Identify speaker signals requiring a response and respond accordingly.
- C3.05 Listen attentively and take accurate notes.
- C3.06 Use telephone to receive information.

- C3.07 Analyze and distinguish information from formal and informal oral presentations.

TOPIC C4: Access, organize, and evaluate information.

- C4.01 Distinguish fact from opinion.
- C4.02 Use various print and non-print sources for specialized information.
- C4.03 Interpret and distinguish between literal and figurative meaning.
- C4.04 Interpret written or oral communication in relation to context and writer's point of view.
- C4.05 Use relevant sources to gather information for written or oral communication.

TOPIC C5: Use written and/or oral language skills to work cooperatively to solve problems, make decisions, take actions, and reach agreement.

- C5.01 Select appropriate words for communication needs.
- C5.02 Use reading, writing, listening, and speaking skills to solve problems.
- C5.03 Compose inquiries and requests.
- C5.04 Write persuasive letters and memos.
- C5.05 Edit written reports, letters, memos, and short notes for clarity, correct grammar, and effective sentences.
- C5.06 Write logical and understandable statements, phrases, or sentences for filling out forms, for correspondence or reports.
- C5.07 Write directions or summaries of processes, mechanisms, events, or concepts.
- C5.08 Select and use appropriate formats for presenting reports.
- C5.09 Convey information to audiences in writing.
- C5.10 Compose technical reports and correspondence that meet accepted standards for written communications.

TOPIC C6: Communicate ideas and information using oral and written forms for a variety of audiences and purposes.

- C6.01 Give complex oral instructions.
- C6.02 Describe a business or industrial process/mechanism.
- C6.03 Participate effectively in group discussions and decision making.
- C6.04 Produce effective oral messages utilizing different media.
- C6.05 Explore ideas orally with partners.
- C6.06 Participate in conversations by volunteering information when appropriate and asking relevant questions when appropriate.
- C6.07 Restate or paraphrase a conversation to confirm one's own understanding.
- C6.08 Gather and provide information utilizing different media.

- C6.09 Prepare and deliver persuasive, descriptive, and demonstrative oral presentations.

RELATED ACADEMIC TOPICS FOR MATHEMATICS

- M1 Relate number relationships, number systems, and number theory.
- M2 Explore patterns and functions.
- M3 Explore algebraic concepts and processes.
- M4 Explore the concepts of measurement.
- M5 Explore the geometry of one-, two-, and three-dimensions.
- M6 Explore concepts of statistics and probability in real world situations.
- M7 Apply mathematical methods, concepts, and properties to solve a variety of real-world problems.

EXPANDED TOPICS FOR MATHEMATICS

TCPIC M1: Relate number relationships, number systems, and number theory.

- M1.01 Understand, represent, and use numbers in a variety of equivalent forms (integer, fraction, decimal, percent, exponential, and scientific notation) in real world and mathematical problem situations.
- M1.02 Develop number sense for whole numbers, fractions, decimals, integers, and rational numbers.
- M1.03 Understand and apply ratios, proportions, and percents in a wide variety of situations.
- M1.04 Investigate relationships among fractions, decimals, and percents.
- M1.05 Compute with whole numbers, fractions, decimals, integers, and rational numbers.
- M1.06 Develop, analyze, and explain procedures for computation and techniques for estimations.
- M1.07 Select and use an appropriate method for computing from among mental arithmetic, paper-and-pencil, calculator, and computer methods.
- M1.08 Use computation, estimation, and proportions to solve problems.
- M1.09 Use estimation to check the reasonableness of results.

TOPIC M2: Explore patterns and functions.

- M2.01 Describe, extend, analyze, and create a wide variety of patterns.
- M2.02 Describe and represent relationships with tables, graphs, and rules.
- M2.03 Analyze functional relationships to explain how a change in one quantity results in a change in another.
- M2.04 Use patterns and functions to represent and solve problems.
- M2.05 Explore problems and describe results using graphical, numerical, physical, algebraic, and verbal mathematical models or representations.

- M2.06 Use a mathematical idea to further their understanding of other mathematical ideas.
- M2.07 Apply mathematical thinking and modeling to solve problems that arise in other disciplines, such as art, music, and business.

TOPIC M3: Explore algebraic concepts and processes.

- M3.01 Represent situations and explore the interrelationships of number patterns with tables, graphs, verbal rules, and equations.
- M3.02 Analyze tables and graphs to identify properties and relationships and to interpret expressions and equations.
- M3.03 Apply algebraic methods to solve a variety of real world and mathematical problems.

TOPIC M4: Explore the concepts of measurement.

- M4.01 Estimate, make, and use measurements to describe and compare phenomena.
- M4.02 Select appropriate units and tools to measure to the degree of accuracy required in a particular situation.
- M4.03 Extend understanding of the concepts of perimeter, area, volume, angle measure, capacity, and weight and mass.
- M4.04 Understand and apply reasoning processes, with special attention to spatial reasoning and reasoning with proportions and graphs.

TOPIC M5: Explore the geometry of one-, two-, and three-dimensions.

- M5.01 Identify, describe, compare, and classify geometric figures.
- M5.02 Visualize and represent geometric figures with special attention to developing spatial sense.
- M5.03 Explore transformations of geometric figures.
- M5.04 Understand and apply geometric properties and relationships.
- M5.05 Classify figures in terms of congruence and similarity and apply these relationships.

TOPIC M6: Explore the concepts of statistics and probability in real world situations.

- M6.01 Systematically collect, organize, and describe data.
- M6.02 Construct, read, and interpret tables, charts, and graphs.
- M6.03 Develop an appreciation for statistical methods as powerful means for decision making.
- M6.04 Make predictions that are based on exponential or theoretical probabilities.

- M6.05 Develop an appreciation for the pervasive use of probability in the real world.

TOPIC M7: Apply mathematical methods, concepts, and properties to solve a variety of real-world problems.

- M7.01 Use computers and/or calculators to process information for all mathematical situations.
- M7.02 Use problem-solving approaches to investigate and understand mathematical content.
- M7.03 Formulate problems from situations within and outside mathematics.
- M7.04 Generalize solutions and strategies to new problem situations.

RELATED ACADEMIC TOPICS FOR SCIENCE

- S1 Explain the Anatomy and Physiology of the human body.
- S2 Apply the basic biological principles of Plants, Viruses and Monerans, Algae, Protista, and Fungi.
- S3 Relate the nine major phyla of the kingdom animalia according to morphology, anatomy, and physiology.
- S4 Explore the chemical and physical properties of the earth to include Geology, Meteorology, Oceanography, and the Hydrologic Cycle.
- S5 Investigate the properties and reactions of matter to include symbols, formulas and nomenclature, chemical equations, gas laws, chemical bonding, acid-base reactions, equilibrium, oxidation-reduction, nuclear chemistry, and organic chemistry.
- S6 Explore the principles and theories related to motion, mechanics, electricity, magnetism, light energy, thermal energy, wave energy, and nuclear physics.
- S7 Explore the principles of genetic and molecular Biology to include the relationship between traits and patterns of inheritance, population genetics, the structure and function of DNA, and current applications of DNA technology.
- S8 Apply concepts related to the scientific process and method to include safety procedures for classroom and laboratory; use and care of scientific equipment; interrelationships between science, technology and society; and effective communication of scientific results in oral, written, and graphic form.

EXPANDED TOPICS FOR SCIENCE

TOPIC S1: Explain the Anatomy and Physiology of the human body.

- S1.01 Recognize common terminology and meanings.
- S1.02 Explore the relationship of the cell to more complex systems within the body.

- S1.03 Summarize the functional anatomy of all the major body systems.
- S1.04 Relate the physiology of the major body systems to its corresponding anatomy.
- S1.05 Compare and contrast disease transmission and treatment within each organ system.
- S1.06 Explore the usage of medical technology as related to human organs and organ systems.
- S1.07 Explain the chemical composition of body tissue.

TOPIC S2: Apply the basic biological principles of Plants, Viruses and Monerans, Algae, Protista, and Fungi.

- S2.01 Identify the major types and structures of plants, viruses, monera, algae protista, and fungi.
- S2.02 Explain sexual and asexual reproduction.
- S2.03 Describe the ecological importance of plants as related to the environment.
- S2.04 Analyze the physical chemical and behavioral process of a plant.

TOPIC S3: Relate the nine major phyla of the kingdom animalia according to morphology, anatomy, and physiology.

- S3.01 Explain the morphology, anatomy, and physiology of animals.
- S3.02 Describe the characteristics, behaviors, and habitats of selected animals.

TOPIC S4: Explore the chemical and physical properties of the earth to include Geology, Meteorology, Oceanography, and the Hydrologic Cycle.

- S4.01 Examine minerals and their identification, products of the rock cycle, byproducts of weathering, and the effects of erosion.
- S4.02 Relate the Hydrologic Cycle to include groundwater its zones, movement, and composition; surface water systems, deposits, and runoff.
- S4.03 Consider the effects of weather and climate on the environment.
- S4.04 Examine the composition of seawater; wave, tides, and currents; organisms, environment, and production of food; energy, food and mineral resources of the oceans.

TOPIC S5: Investigate the properties and reactions of matter to include symbols, formulas and nomenclature, chemical equations, gas laws, chemical bonding, acid-base reactions, equilibrium, oxidation-reduction, nuclear chemistry, and organic chemistry.

- S5.01 Examine the science of chemistry to include the nature of matter, symbols, formulas and nomenclature, and chemical equations.

- S5.02 Identify chemical reactions including precipitation, acids-bases, and reduction-oxidation.
- S5.03 Explore the fundamentals of chemical bonding and principles of equilibrium.
- S5.04 Relate the behavior of gases.
- S5.05 Investigate the structure, reactions, and uses of organic compounds; and investigate nuclear chemistry and radiochemistry.

TOPIC S6: Explore the principles and theories related to motion, mechanics, electricity, magnetism, light energy, thermal energy, wave energy, and nuclear physics.

- S6.01 Examine fundamentals of motion of physical bodies and physical dynamics.
- S6.02 Explore the concepts and relationships among work, power, and energy.
- S6.03 Explore principles, characteristics, and properties of electricity, magnetism, light energy, thermal energy, and wave energy.
- S6.04 Identify principles of modern physics related to nuclear physics.

TOPIC S7: Explore the principles of genetic and molecular Biology to include the relationship between traits and patterns of inheritance; population genetics, the structure and function of DNA, and current applications of DNA technology.

- S7.01 Examine principles, techniques, and patterns of traits and inheritance in organisms.
- S7.02 Apply the concept of population genetics to both microbial and multicellular organism.
- S7.03 Identify the structure and function of DNA and the uses of DNA technology in science, industry, and society.

TOPIC S8: Apply concepts related to the scientific process and method to include safety procedures for classroom and laboratory; use and care of scientific equipment; interrelationships between science, technology and society; and effective communication of scientific results in oral, written, and graphic form.

- S8.01 Apply the components of scientific processes and methods in classroom and laboratory investigations.
- S8.02 Observe and practice safe procedures in the classroom and laboratory.
- S8.03 Demonstrate proper use and care for scientific equipment.
- S8.04 Investigate science careers, and advances in technology.
- S8.05 Communicate results of scientific investigations in oral, written, and graphic form.

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APPENDIX B:
WORKPLACE SKILLS

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APPENDIX B WORKPLACE SKILLS FOR THE 21ST CENTURY

- WP1 Allocates resources (time, money, materials and facilities, and human resources).
- WP2 Acquires, evaluates, organizes and maintains, and interprets/communicates information, including the use of computers.
- WP3 Practices interpersonal skills related to careers including team member participation, teaching other people, serving clients/customers, exercising leadership, negotiation, and working with culturally diverse.
- WP4 Applies systems concept including basic understanding, monitoring and correction system performance, and designing and improving systems.
- WP5 Selects, applies, and maintains/troubleshoots technology.
- WP6 Employs thinking skills including creative thinking, decision making, problem solving, reasoning, and knowing how to learn.

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APPENDIX C:
STUDENT COMPETENCY PROFILE

STUDENT COMPETENCY PROFILE

Student: _____

This record is intended to serve as a method of noting student achievement of the competencies in each course. It can be duplicated for each student and serve as a cumulative record of competencies achieved in the program.

In the blank before each competency, place the date on which the student mastered the competency.

Forest Mensuration I (FOT 1114)

- _____ 1. Establish the physical location of timber and forest products to be cruised.
- _____ 2. Apply sampling techniques to measure standing timber and forest products on a given tract of land.
- _____ 3. Process field data to determine volume of forest products on a given plot of land.
- _____ 4. Summarize field data and prepare a cruise report.

Survey of Forestry (FOT 1813)

- _____ 1. Trace the development of forestry in Mississippi and in the United States.
- _____ 2. Explore career opportunities in the forest and forest products industries.
- _____ 3. Apply common terminology used in forest occupations.

Forest Surveying (FOT 2124)

- _____ 1. Interpret the legal description of land.
- _____ 2. Locate and interpret land deeds.
- _____ 3. Interpret maps and aerial photographs.
- _____ 4. Demonstrate the use of surveying equipment and instruments in forestry technology occupations.
- _____ 5. Demonstrate surveying practices used in forestry technology occupations.

Silviculture I (FOT 2614)

- _____ 1. Apply principles of tree physiology (silvics).
- _____ 2. Apply principles of regeneration and reproductive cuttings.
- _____ 3. Select intermediate cutting procedures for various stands of timber.

Applied Dendrology (FOT 1713)

- _____ 1. Apply the binomial classification system.
- _____ 2. Apply site-species relationships.
- _____ 3. Identify commercially important tree species.

Timber Harvesting (FOT 2424)

- _____ 1. Describe timber harvesting equipment and practices used in the southeastern United States.
- _____ 2. Apply regulations associated with timber harvesting operations.
- _____ 3. Prepare a timber harvesting plan for a given parcel of timber.
- _____ 4. Interpret timber sale contract.

Forest Mensuration II (FOT 1124)

- _____ 1. Perform forest measurements using computerized equipment.

Forest Protection (FOT 1314)

- _____ 1. Apply prescribed burning methods.
- _____ 2. Apply fire suppression techniques.
- _____ 3. Apply insect control techniques.
- _____ 4. Apply disease control methods.

Forest Products Utilization (FOT 1414)

- _____ 1. Discuss wood and forest products processing operations.
- _____ 2. Apply principles of forest products processing.

Silviculture II (FOT 2624)

- _____ 1. Apply regeneration practices used in the forest industry.
- _____ 2. Apply site preparation practices used in the forest industry.

Special Problem in Forestry Technology (FOT 291(1-3))

- _____ 1. Prepare a written agreement.
- _____ 2. Prepare a written report of activities.
- _____ 3. Follow written guidelines for work experience programs.

Work-Based Learning in Forestry Technology (FOT 292(1-6))

- _____ 1. Apply technical skills needed to be viable member of the work force.
- _____ 2. Apply skills developed in other program area courses.
- _____ 3. Apply human relationship skills.
- _____ 4. Apply and practice positive work habits and responsibilities.
- _____ 5. Work with instructor and employer to develop written occupational objectives to be accomplished.
- _____ 6. Assess accomplishment of objectives.
- _____ 7. Utilize a set of written guidelines for the work-based learning program.